

# United States Department of Agriculture,

## BUREAU OF PLANT INDUSTRY.

B. T. GALLOWAY, Chief of Bureau.



### PUBLICATIONS OF THE BUREAU OF PLANT INDUSTRY.

#### BULLETINS.

The scientific and technical publications of the Bureau of Plant Industry, which was organized July 1, 1901, are issued in a special series of bulletins, usually in very small editions, a list of which follows.<sup>1</sup>

Attention is directed to the fact that "the serial, scientific, and technical publications of the United States Department of Agriculture are not for general distribution. All copies not required for official use are by law turned over to the Superintendent of Documents, who is empowered to sell them at cost." All applications for these bulletins should therefore be made to the Superintendent of Documents, Government Printing Office, Washington, D. C., accompanied by either a postal money order, an express money order, a draft on New York, or by cash. Postage stamps, foreign money, uncertified checks, and defaced or slick coin will not be accepted in payment for publications. No charge is made for postage on documents forwarded to points in the United States, Guam, Hawaii, Philippine Islands, and Porto Rico, or to Canada, Cuba, or Mexico. To other countries the regular rate of postage is charged, and remittances must cover such postage.

- No. \*†1. The Relation of Lime and Magnesia to Plant Growth. I. Liming of Soils from a Physiological Standpoint. II. Experimental Study of the Relation of Lime and Magnesia to Plant Growth. 1901.
- \*2. Spermatogenesis and Fecundation of *Zamia*. 1901. Price, 20 cents.
- \*3. Macaroni Wheats. 1901. Price, 20 cents.
- \*4. Range Improvement in Arizona. 1901. Price, 10 cents.
- \*†5. Seeds and Plants Imported through the Section of Seed and Plant Introduction for Distribution in Cooperation with the Agricultural Experiment Stations. Inventory No. 9, Numbers 4351-5500. 1902.
- †6. A List of American Varieties of Peppers. 1902.
- \*†7. The Algerian Durum Wheats: A Classified List, with Descriptions. 1902.
- \*8. A Collection of Economic and Other Fungi Prepared for Distribution. 1902. Price, 10 cents.
- \*9. The North American Species of *Spartina*. 1902. Price, 10 cents.
10. Records of Seed Distribution and Cooperative Experiments with Grasses and Forage Plants. 1902. Price, 10 cents.
11. Johnson Grass: Report of Investigations Made during the Season of 1901. 1902. Price, 10 cents.

<sup>1</sup> For a subject index to Bulletins Nos. 1 to 100, inclusive, see Bulletin No. 101 of this series. Each bulletin issued since No. 101 contains an index of its contents.

\* The Department supply of the bulletins marked with a star is exhausted, and copies can not be furnished to collaborators of the Bureau of Plant Industry.

† The supply of the Superintendent of Documents of the bulletins marked with a dagger is exhausted, and copies can not be furnished.

- No. \*†12. Stock Ranges of Northwestern California: Notes on the Grasses and Forage Plants and Range Conditions. 1902.
- \*13. Experiments in Range Improvement in Central Texas. 1902. Price, 10 cents.
- \*14. The Decay of Timber and Methods of Preventing It. 1902. Price, 55 cents.
- \*15. Forage Conditions on the Northern Border of the Great Basin, Being a Report upon Investigations Made during July and August, 1901, in the Region between Winnemucca, Nevada, and Ontario, Oregon. 1902. Price, 15 cents.
- \*†16. A Preliminary Study of the Germination of the Spores of *Agaricus Campestris* and Other Basidiomycetous Fungi. 1902.
- \*17. Some Diseases of the Cowpea: I. The Wilt Disease of the Cowpea and Its Control. II. A Cowpea Resistant to Root-Knot (*Heterodera Radicicola*). 1902. Price, 10 cents.
- \*†18. Observations on the Mosaic Disease of Tobacco. 1902.
- \*†19. Kentucky Bluegrass Seed: Harvesting, Curing, and Cleaning. 1902.
20. Manufacture of Semolina and Macaroni. 1902. Price, 15 cents.
- \*†21. List of American Varieties of Vegetables for the Years 1901 and 1902. 1903.
- \*22. Injurious Effects of Premature Pollination; with General Notes on Artificial Pollination and the Setting of Fruit without Pollination. 1902. Price, 10 cents.
- \*23. Berseem: The Great Forage and Soiling Crop of the Nile Valley. 1902. Price, 15 cents.
24. The Manufacture and Preservation of Unfermented Grape Must. 1902. Price, 10 cents.
25. Miscellaneous Papers: I. The Seeds of Rescue Grass and Chess. II. Saragolla Wheat. III. Plant Introduction Notes from South Africa. IV. Congressional Seed and Plant Distribution Circulars, 1902-1903. 1903. Price, 15 cents.
- \*†26. Spanish Almonds and Their Introduction into America. 1902.
27. Letters on Agriculture in the West Indies, Spain, and the Orient. 1902. Price, 15 cents.
- \*†28. The Mango in Porto Rico. 1903.
29. The Effect of Black-Rot on Turnips: A Series of Photomicrographs, Accompanied by an Explanatory Text. 1903. Price, 15 cents.
- \*†30. Budding the Pecan. 1902.
31. Cultivated Forage Crops of the Northwestern States. 1902. Price, 10 cents.
32. A Disease of the White Ash Caused by *Polyporus Fraxinophilus*. 1903. Price, 10 cents.
33. North American Species of *Leptochloa*. 1903. Price, 15 cents.
- \*†34. Silkworm Food Plants: Cultivation and Propagation. 1903.
- \*35. Recent Foreign Explorations, as Bearing on the Agricultural Development of the Southern States. 1903. Price, 15 cents.
36. The "Bluing" and the "Red-Rot" of the Western Yellow Pine, with Special Reference to the Black Hills Forest Reserve. 1903. Price, 30 cents.
37. Formation of the Spores in the Sporangia of *Rhizopus Nigricans* and of *Phycomyces Nitens*. 1903. Price, 15 cents.
- \*38. Forage Conditions and Problems in Eastern Washington, Eastern Oregon, Northeastern California, and Northwestern Nevada. 1903. Price, 15 cents.
39. The Propagation of the Easter Lily from Seed. 1903. Price, 10 cents.
- \*†40. Cold Storage, with Special Reference to the Pear and Peach. 1903.
- \*41. The Commercial Grading of Corn. 1903. Price, 10 cents.
42. Three New Plant Introductions from Japan. 1903. Price, 10 cents.
- †43. Japanese Bamboos and Their Introduction into America. 1903.
- \*†44. The Bitter-Rot of Apples. 1903.
- †45. The Physiological Role of Mineral Nutrients in Plants. 1903.
- \*†46. The Propagation of Tropical Fruit Trees and Other Plants. 1903.
- \*47. The Description of Wheat Varieties. 1903. Price, 10 cents.

\* The Department supply of the bulletins marked with a star is exhausted, and copies can not be furnished to collaborators of the Bureau of Plant Industry.

† The supply of the Superintendent of Documents of the bulletins marked with a dagger is exhausted, and copies can not be furnished.

- No. 48. The Apple in Cold Storage. 1903. Price, 15 cents.
- \*49. The Culture of the Central American Rubber Tree. 1903. Price, 25 cents.
- \*50. Wild Rice: Its Uses and Propagation. 1903. Price, 10 cents.
51. Miscellaneous Papers: I. The Wilt Disease of Tobacco and Its Control. II.\* The Work of the Community Demonstration Farm at Terrell, Tex. III.\* Fruit Trees Frozen in 1904. IV. The Cultivation of the Australian Wattle. V.\*† Legal and Customary Weights per Bushel of Seeds. VI.\*† Golden Seal. 1905. Price of complete bulletin, 5 cents; separates, 5 cents each.
- \*†52. Wither-Tip and Other Diseases of Citrus Trees and Fruits Caused by *Colletotrichum Gloeosporioides*. 1904.
- \*†53. The Date Palm and Its Utilization in the Southwestern States. 1904.
54. Persian Gulf Dates and Their Introduction into America. 1903. Price, 10 cents.
- \*†55. The Dry-Rot of Potatoes Due to *Fusarium Oxy-sporum*. 1904.
- \*†56. Nomenclature of the Apple; a Catalogue of the Known Varieties Referred to in American Publications from 1804 to 1904. 1905.
- †57. Methods Used for Controlling and Reclaiming Sand Dunes. 1904.
- \*†58. The Vitality and Germination of Seeds. 1904.
59. Pasture, Meadow, and Forage Crops in Nebraska. 1904. Price, 10 cents.
- \*60. A Soft Rot of the Calla Lily. 1904. Price, 10 cents.
61. The Avocado in Florida; Its Propagation, Cultivation, and Marketing. 1904. Price, 5 cents.
62. Notes on Egyptian Agriculture. 1904. Price, 10 cents.
- †63. Investigations of Rusts. 1904.
- \*†64. A Method of Destroying or Preventing the Growth of Algae and Certain Pathogenic Bacteria in Water Supplies. 1904.
- †65. Reclamation of Cape Cod Sand Dunes. 1904.
- \*†66. Seeds and Plants Imported during the Period from September, 1900, to December, 1903. Inventory No. 10; Nos. 5501-9896. 1905.
- \*67. Range Investigations in Arizona. 1904. Price, 15 cents.
- \*68. North American Species of *Agrostis*. 1905. Price, 10 cents.
69. American Varieties of Lettuce. 1904. Price, 15 cents.
70. The Commercial Status of Durum Wheat. 1904. Price, 10 cents.
- \*71. Soil Inoculation for Legumes; with Reports upon the Successful Use of Artificial Cultures by Practical Farmers. 1905. Price, 15 cents.
72. Miscellaneous Papers: I.† Cultivation of Wheat in Permanent Alfalfa Fields. II. The Salt Water Limits of Wild Rice. III.\* Extermination of Johnson Grass. IV.\* Inoculation of Soil with Nitrogen-Fixing Bacteria. 1905. Price of complete bulletin, 5 cents; separates, 5 cents each.
73. The Development of Single-Germ Beet Seed. 1905. Price, 10 cents.
- \*74. The Prickly Pear and Other Cacti as Food for Stock. 1905. Price, 5 cents.
75. Range Management in the State of Washington. 1905. Price, 5 cents.
- \*76. Copper as an Algicide and Disinfectant in Water Supplies. 1905. Price, 5 cents.
77. The Avocado: A Salad Fruit from the Tropics. 1905. Price, 5 cents.
- \*†78. Improving the Quality of Wheat. 1905.
79. The Variability of Wheat Varieties in Resistance to Toxic Salts. 1905. Price, 5 cents.
80. Agricultural Explorations in Algeria. 1905. Price, 10 cents.
81. Evolution of Cellular Structures. 1905. Price, 5 cents.
82. Grass Lands of the South Alaska Coast. 1905. Price, 10 cents.
83. The Vitality of Buried Seeds. 1905. Price, 5 cents.
- \*84. The Seeds of the Bluegrasses: I. The Germination, Growing, Handling, and Adulteration of Bluegrass Seeds. II. Descriptions of the Seeds of the Commercial Bluegrasses and Their Impurities. 1905. Price, 5 cents.
- \*85. The Principles of Mushroom Growing and Mushroom Spawn Making. 1905. Price, 10 cents.
86. Agriculture without Irrigation in the Sahara Desert. 1905. Price, 5 cents.
- \*†87. Disease Resistance of Potatoes. 1905.

\*The Department supply of the bulletins and parts of bulletins (in separate form) marked with a star is exhausted, and copies can not be furnished to collaborators of the Bureau of Plant Industry.

†The supply of the Superintendent of Documents of the bulletins and parts of bulletins (in separate form) marked with a dagger is exhausted, and copies can not be furnished.

- No. 88. Weevil-Resisting Adaptations of the Cotton Plant. 1906. Price, 10 cents.  
 89. Wild Medicinal Plants of the United States. 1906. Price, 5 cents.  
 \*90. Miscellaneous Papers: I.\* The Storage and Germination of Wild Rice Seed. II. The Crown-Gall and Hairy-Root Diseases of the Apple Tree. III.\*† Peppermint. IV.\* The Poisonous Action of Johnson Grass. 1906. Price of complete bulletin, 5 cents; separates, 5 cents each.  
 91. Varieties of Tobacco Seed Distributed in 1905-6, with Cultural Directions. 1906. Price, 5 cents.  
 \*†92. Date Varieties and Date Culture in Tunis. 1906.  
 \*†93. The Control of Apple Bitter-Rot. 1906.  
 \*94. Farm Practice with Forage Crops in Western Oregon and Western Washington. 1906. Price, 10 cents.  
 \*95. A New Type of Red Clover. 1906. Price, 10 cents.  
 \*96. Tobacco Breeding. 1907. Price, 15 cents.  
 \*97. Seeds and Plants Imported during the Period from December, 1903, to December, 1905. Inventory No. 11; Nos. 9897 to 16796. 1907. Price, 30 cents.  
 98. Soy Bean Varieties. 1907. Price, 15 cents.  
 \*99. A Quick Method for the Determination of Moisture in Grain. 1907. Price, 5 cents.  
 †100. Miscellaneous Papers: I.\* Cranberry Spraying Experiments in 1905. II.\* The Wrapping of Apple Grafts and Its Relation to the Crown-Gall Disease. III. Garlicky Wheat. IV. Methods of Testing the Burning Quality of Cigar Tobacco. V.\* The Drug Known as Pinkroot. VI.\* Orchard Grass. VII. The Effect of Copper upon Water Bacteria. VIII. Conditions Affecting Legume Inoculation. 1907. Price of separates, 5 cents each, except Part VIII, which is 10 cents.  
 101. Contents of and Index to Bulletins Nos. 1 to 100, Inclusive. 1907. Price, 15 cents.  
 \*102. Miscellaneous Papers: I.\* Summary of Recent Investigations of the Value of Cacti as Stock Food. II.\* A Successful Dairy Farm. III.\*† Planning a Cropping System. IV. The Application of Vegetative Propagation to Leguminous Forage Plants. V. The Control of Texas Root-Rot of Cotton. VI.\* The History of the Cowpea and Its Introduction into America. VII.\* A New Method for the Determination of Nicotine in Tobacco. 1907. Price of complete bulletin, 15 cents; separates, 5 cents each, except Part VI, which is 10 cents.  
 \*103. Dry Farming in the Great Basin. 1907. Price, 10 cents.  
 \*104. The Use of Feldspathic Rocks as Fertilizers. 1907. Price, 5 cents.  
 \*105. The Relation of the Composition of the Leaf to the Burning Qualities of Tobacco. 1907. Price, 10 cents.  
 \*106. Seeds and Plants Imported during the Period from December, 1905, to July, 1906. Inventory No. 12; Nos. 16797 to 19057. 1907. Price, 15 cents.  
 107. American Root Drugs. 1907. Price, 15 cents.  
 \*108. The Cold Storage of Small Fruits. 1907. Price, 15 cents.  
 \*109. American Varieties of Garden Beans. 1907. Price, 25 cents.  
 \*110. Cranberry Diseases. 1907. Price, 20 cents.  
 †111. Miscellaneous Papers: I. The Larkspurs as Poisonous Plants. II. The Fibers of Long-Staple Upland Cottons. III.\* Imported Low-Grade Clover and Alfalfa Seed. IV. Forage Crops for Hogs in Kansas and Oklahoma. V. The Culture and Uses of Brome-Grass. 1907. Price of separates, 5 cents each.  
 \*112. The Use of Suprarenal Glands in the Physiological Testing of Drug Plants. 1907. Price, 10 cents.  
 \*113. The Comparative Tolerance of Various Plants for the Salts Common in Alkali Soils. 1907. Price, 5 cents.  
 \* 14. Sap-Rot and Other Diseases of the Red Gum. 1907. Price, 15 cents.  
 115. The Disinfection of Sewage Effluents for the Protection of Public Water Supplies. 1907. Price, 10 cents.

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- No. 116. The Tuna as Food for Man. 1907. Price, 25 cents.
- \*117. The Reseeding of Depleted Range and Native Pastures. 1907. Price, 10 cents.
- \*118. Peruvian Alfalfa: A New Long-Season Variety for the Southwest. 1907. Price, 10 cents.
119. The Mulberry and Other Silkworm Food Plants. 1907. Price, 10 cents.
120. The Production of Easter Lily Bulbs in the United States. 1908. Price, 10 cents.
121. Miscellaneous Papers: I. The Supposed Relationship of White Snakeroot to Milksickness, or "Trembles." II.\* Mountain Laurel: A Poisonous Plant. III.\* Results of Loco-Weed Investigations in the Field and Laboratory Work on Loco-Weed Investigations. IV. The Sources of Arsenic in Certain Samples of Dried Hops. V. Apple Leaf-Spot Caused by *Sphaeropsis Malorum*. VI. The Immunity of the Japanese Chestnut to the Bark Disease. 1908. Price of complete bulletin, 15 cents; separates, 5 cents each.
122. Curly-Top, a Disease of the Sugar Beet. 1908. Price, 15 cents.
123. The Decay of Oranges while in Transit from California. 1908. Price, 20 cents.
124. The Prickly Pear as a Farm Crop. 1908. Price, 10 cents.
125. Dry-Land Olive Culture in Northern Africa. 1908. Price, 10 cents.
- \*126. Nomenclature of the Pear; a Catalogue-Index of the Known Varieties Referred to in American Publications from 1804 to 1907. 1908. Price, 30 cents.
- \*127. The Improvement of Mountain Meadows. 1908. Price, 10 cents.
128. Egyptian Cotton in the Southwestern United States. 1908. Price, 15 cents.
129. Barium, a Cause of the Loco-Weed Disease. 1908. Price, 10 cents.
130. Dry-Land Agriculture. Papers Read at the Second Annual Meeting of the Cooperative Experiment Association of the Great Plains Area, Held at Manhattan, Kans., June 26-27, 1907. 1908. Price, 10 cents.
131. Miscellaneous Papers: I.† The Germination of Vegetable Seeds. II.† The Botanical History and Classification of Alfalfa. III. The Cross-Inoculation of Fruit Trees and Shrubs with Crown-Gall. IV.\* Recent Studies of the Olive-Tubercle Organism. V. The Nectaries of Cotton. 1908. Price of complete bulletin, 10 cents; separates, 5 cents each.
- \*†132. Seeds and Plants Imported during the Period from July, 1906, to December 31, 1907. Inventory No. 13; Nos. 19058 to 21730. 1908.
133. Peach, Apricot, and Prune Kernels as By-Products of the Fruit Industry of the United States. 1908. Price, 5 cents.
134. The Influence of a Mixture of Soluble Salts, Principally Sodium Chlorid, upon the Leaf Structure and Transpiration of Wheat, Oats, and Barley. 1908. Price, 5 cents.
135. Orchard Fruits in the Piedmont and Blue Ridge Regions of Virginia and the South Atlantic States. 1908. Price, 20 cents.
- \*136. Methods and Causes of Evolution. 1908. Price, 10 cents.
137. Seeds and Plants Imported during the Period from January 1 to March 31, 1908. Inventory No. 14; Nos. 21732 to 22510. 1909. Price, 10 cents.
- \*138. The Production of Cigar-Wrapper Tobacco under Shade in the Connecticut Valley. 1908. Price, 15 cents.
139. American Medicinal Barks. 1909. Price, 15 cents.
- \*140. The "Spineless" Prickly Pears. 1909. Price, 10 cents.
141. Miscellaneous Papers: I.\* The Relation of Nicotine to the Burning Quality of Tobacco. II. The Granville Tobacco Wilt. III. The Florida Velvet Bean and Its History. IV. The Importance of Broad Breeding in Corn. V. The Present Status of the Chestnut-Bark Disease. 1909. Price of complete bulletin, 10 cents; separates, 5 cents each, except Part III, which is 10 cents.
142. Seeds and Plants Imported during the Period from April 1 to June 30, 1908. Inventory No. 15; Nos. 22511 to 23322. 1909. Price, 10 cents.

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- No. 143. Principles and Practical Methods of Curing Tobacco. 1909. Price, 10 cents.
144. Apple Blotch, a Serious Disease of Southern Orchards. 1909. Price, 15 cents.
145. Vegetation Affected by Agriculture in Central America. 1909. Price, 15 cents.
146. The Superiority of Line Breeding over Narrow Breeding. 1909. Price, 10 cents.
147. Suppressed and Intensified Characters in Cotton Hybrids. 1909. Price, 5 cents.
148. Seeds and Plants Imported during the Period from July 1 to September 30, 1908. Inventory No. 16; Nos. 23323 to 23744. 1909. Price, 10 cents.
- \*149. Diseases of Deciduous Forest Trees. 1909. Price, 15 cents.
150. The Wild Alfalfas and Clovers of Siberia, with a Perspective View of the Alfalfas of the World. 1909. Price, 10 cents.
151. Fruits Recommended by the American Pomological Society for Cultivation in the Various Sections of the United States and Canada. 1909. Price, 15 cents.
152. The Loose Smuts of Barley and Wheat. 1909. Price, 15 cents.
153. Seeds and Plants Imported during the Period from October 1 to December 31, 1908. Inventory No. 17; Nos. 23745 to 24429. 1909. Price, 10 cents.
154. Farm Water Supplies of Minnesota. 1909. Price, 15 cents.
155. The Control of Black-Rot of the Grape. 1909. Price, 15 cents.
156. A Study of Diversity in Egyptian Cotton. 1909. Price, 15 cents.
157. The Truckee-Carson Experiment Farm. 1909. Price, 10 cents.
158. The Root-Rot of Tobacco Caused by *Thielavia Basicola*. 1909. Price, 15 cents.
159. Local Adjustment of Cotton Varieties. 1909. Price, 10 cents.
160. Italian Lemons and Their By-Products. I. The Italian Lemon Industry. II. The By-Products of the Lemon in Italy. 1909. Price, 15 cents.
161. A New Type of Indian Corn from China. 1909. Price, 10 cents.
162. Seeds and Plants Imported during the Period from January 1 to March 31, 1909. Inventory No. 18; Nos. 24430 to 25191. 1909. Price, 10 cents.
163. Varieties of American Upland Cotton. [In press.]
164. Promising Root Crops for the South. I. Yautias, Taros, and Dasheens. II. Agricultural History and Utility of the Cultivated Aroids. 1910. Price, 10 cents.
165. Application of Some of the Principles of Heredity to Plant Breeding. 1909. Price, 10 cents.
166. The Mistletoe Pest in the Southwest. 1910. Price, 10 cents.
167. New Methods of Plant Breeding. 1910. Price, 20 cents.
168. Seeds and Plants Imported during the Period from April 1 to June 30, 1909. Inventory No. 19; Nos. 25192 to 25717. 1909. Price, 5 cents.
169. Variegated Alfalfa. 1910. Price, 10 cents.
170. Traction Plowing. [In press.]
171. Some Fungous Diseases of Economic Importance. [In press.]
172. Grape Investigations in Vinifera Regions with Reference to the Adaptability of Resistant Stocks, Direct Producers, and Viniferas and the Congeniality of Viniferas to Resistant Stocks. [In press.]
173. Seasonal Nitrification as Influenced by Crops and Tillage. [In press.]
174. The Control of Peach Brown-Rot and Scab. [In press.]
175. The History and Distribution of Sorghum. [In press.]
176. Seeds and Plants Imported during the Period from July 1 to September 30, 1909. Inventory No. 20; Nos. 25718 to 26047. [In press.]
177. A Protected Stock Range in Arizona. [In press.]

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## NUMBERED CIRCULARS.

The numbered circulars of the Bureau of Plant Industry are intended for gratuitous distribution within the territory of the United States and will be sent free of charge<sup>1</sup> upon application to the Secretary of Agriculture, Washington, D. C.

- No. \*1. Self-Boiled Lime-Sulphur Mixture as a Promising Fungicide.<sup>2</sup> 1908.  
 2. An Improved Method of Separating Buckhorn from Red Clover and Alfalfa Seeds. 1908.  
 3. Some Stem Tumors or Knots on Apple and Quince Trees. 1908.  
 4. The Treatment of Damping-Off in Coniferous Seedlings. 1908.  
 5. Barley Culture in the Northern Great Plains. 1908.  
 6. The Cultivation and Handling of Goldenseal. 1908.  
 \*7. The Field Treatment of Tobacco Root-Rot. 1908.  
 8. The Smuts of Sorghum. 1908.  
 9. Texas Root-Rot of Cotton: Field Experiments in 1907. 1908.  
 10. Notes on Dry Farming. 1908.  
 11. Danger in Judging Cotton Varieties by Lint Percentages. 1908.  
 12. Dry-Land Grains. 1908.  
 13. The Work of the San Antonio Experiment Farm in 1907. 1908.  
 14. Change of Vegetation on the South Texas Prairies. 1908.  
 15. The Fertilizing Value of Hairy Vetch for Connecticut Tobacco Fields. 1908.  
 \*16. A New Basis for Barley Valuation and Improvement. 1908.  
 \*17. Index to Papers Relating to Plant-Industry Subjects in the Yearbooks of the United States Department of Agriculture. 1908.  
 18. Reappearance of a Primitive Character in Cotton Hybrids. 1908.  
 19. The Decay of Florida Oranges while in Transit and on the Market. 1908.  
 \*20. An Electrical Resistance Method for the Rapid Determination of the Moisture Content of Grain. 1908.  
 21. Farmers' Cooperative Demonstration Work in Its Relation to Rural Improvement. 1908.  
 22. Farm Methods of Applying Land Plaster in Western Oregon and Western Washington. 1909.  
 23. Potato Diseases in San Joaquin County, California. 1909.  
 24. Alfalfa in Cultivated Rows for Seed Production in Semiarid Regions. 1909.  
 25. The Cost of Clearing Logged-Off Land for Farming in the Pacific Northwest. 1909.  
 26. Some Factors Affecting the Keeping Qualities of American Lemons. 1909.  
 27. Lime-Sulphur Mixtures for the Summer Spraying of Orchards. 1909.  
 28. Clover-Seed Production in the Willamette Valley, Oregon. 1909.  
 29. Experiments with Egyptian Cotton in 1908. 1909.  
 30. Improvement of the Oat Crop. 1909.  
 31. Notes on the Number and Distribution of Native Legumes in Nebraska and Kansas. 1909.  
 32. Moisture Content and Shrinkage in Grain. 1909.  
 33. The Necessity for New Standards of Hop Valuation. 1909.  
 34. The Work of the San Antonio Experiment Farm in 1908. 1909.  
 35. The Present Status of the White-Pine Blights. 1909.  
 36. The Bud-Rot of the Coconut Palm. 1909.  
 37. Comparative Tests of Sugar-Beet Varieties. 1909.  
 \*38. European Currant Rust on the White Pine in America. 1909.  
 39. The Decay of Cabbage in Storage: Its Cause and Prevention. 1909.  
 40. A Simple Method of Detecting Sulphured Barley and Oats. 1909.  
 41. The South African Pipe Calabash. 1909.  
 42. Origin of the Hindi Cotton. 1909.  
 43. The Deterioration of Corn in Storage. 1909.  
 44. Minor Items of Farm Equipment. 1910.

<sup>1</sup>To residents of foreign countries a uniform charge of 5 cents each is made for circulars, and except to Canada, Cuba, and Mexico 1 cent additional is required for postage. Orders should be forwarded to the Superintendent of Documents, Government Printing Office, Washington, D. C.

<sup>2</sup>Superseded by Circular No. 27 of the same series, entitled "Lime-Sulphur Mixtures for the Summer Spraying of Orchards."

\*The Department supply of the circulars marked with a star is exhausted, and copies of these can be supplied by the Superintendent of Documents only upon payment of a fee of 5 cents each.

- No. 45. The Utilization of Pea-Cannery Refuse for Forage. 1910.  
 46. The Limitation of the Satsuma Orange to Trifoliolate-Orange Stock. 1909.  
 47. Prickly Comfrey as a Forage Crop. 1910.  
 48. The Present Status of the Tobacco Industry. 1910.  
 49. Improvement of Pastures in Eastern New York and the New England States.  
     [In press.]  
 50. Three Much-Misrepresented Sorghums. [In press.]  
 51. Fruit Growing for Home Use in the Central and Southern Great Plains.  
     [In press.]  
 52. Wart Disease of the Potato; a Dangerous European Disease Liable to be Introduced into the United States. 1910.  
 53. Mutative Reversions in Cotton. [In press.]  
 54. The Substitution of Lime-Sulphur Preparations for Bordeaux Mixture in the Treatment of Apple Diseases. [In press.]  
 55. American Export Corn (Maize) in Europe. [In press.]

#### MISCELLANEOUS CIRCULARS.

A considerable number of miscellaneous circulars and minor publications, referring to many different lines of work and appearing in various forms, have been issued by the Bureau of Plant Industry. These do not bear consecutive numbers or constitute a regular series, and on account of limited editions are not available for distribution, even to public libraries, agricultural experiment stations, or collaborators of the Department of Agriculture. As a matter of fact, they are not classed as "publications" and no announcement of their issue from the press is made by the Department.

#### ANNUAL REPORTS.

A report of the Chief of the Bureau of Plant Industry detailing the principal lines of investigation undertaken and the results accomplished during the preceding twelve months has been issued yearly, both in connection with the Annual Report of the Secretary of Agriculture and in separate form.

The following reports in separate form are available for distribution and will be sent free of charge<sup>1</sup> to any address within the territory of the United States upon application to the Secretary of Agriculture, Washington, D. C.:

- Report of Chief, 1900. By B. T. Galloway.  
 Report of Chief, 1901. By B. T. Galloway.  
 Report of Chief, 1906. By B. T. Galloway.  
 Report of Chief, 1907. By B. T. Galloway.  
 Report of Chief, 1908. By B. T. Galloway.  
 Report of Chief, 1909. By B. T. Galloway.

#### SPECIAL REPORTS.

A report on the beet-sugar industry of the United States has been issued yearly since 1897.

Copies of the following can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., on payment of the prices specified:<sup>2</sup>

- Report —. Progress of the Beet-Sugar Industry in the United States in 1903. By Charles F. Saylor. Price, 10 cents; postage to foreign countries, 5 cents.

<sup>1</sup>To residents of foreign countries a uniform charge of 5 cents each is made for annual reports in separate form, and except to Canada, Cuba, and Mexico 1 cent additional is required for postage. Orders should be forwarded to the Superintendent of Documents, Government Printing Office, Washington, D. C.

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90. Progress of the Beet-Sugar Industry in the United States in 1908. By Charles F. Saylor. Price, 10 cents; postage to foreign countries, 3 cents.

## FARMERS' BULLETINS.

The following Farmers' Bulletins contributed by the Bureau of Plant Industry since its organization in 1901 will be sent free of charge<sup>1</sup> to any address within the territory of the United States upon application to a Senator, Representative, or Delegate in Congress, or to the Secretary of Agriculture, Washington, D. C.<sup>2</sup>

- No. 139. Emmer: A Grain for the Semiarid Regions.
140. Pineapple Growing.
147. Winter Forage Crops for the South. [Distribution discontinued.]
148. Celery Culture.<sup>3</sup> [Distribution discontinued.]
154. The Home Fruit Garden: Preparation and Care.
156. The Home Vineyard, with Special Reference to Northern Conditions.
157. The Propagation of Plants.
161. Practical Suggestions for Fruit Growers. [Distribution discontinued.]
164. Rape as a Forage Crop.
167. Cassava.
168. Pearl Millet. [Distribution discontinued.]
174. Broom Corn.
175. Home Manufacture and Use of Unfermented Grape Juice.
176. Cranberry Culture.
181. Pruning.
185. Beautifying the Home Grounds.
188. Weeds Used in Medicine.
194. Alfalfa Seed.
195. Annual Flowering Plants.
198. Strawberries.
199. Corn Growing.
204. The Cultivation of Mushrooms.
208. Varieties of Fruits Recommended for Planting. [Distribution discontinued.]
213. Raspberries.
214. Beneficial Bacteria for Leguminous Crops.<sup>4</sup> [Distribution discontinued.]
215. Alfalfa Growing.<sup>5</sup> [Distribution discontinued.]
217. Essential Steps in Securing an Early Crop of Cotton.<sup>6</sup>
218. The School Garden.
219. Lessons from the Grain-Rust Epidemic of 1904.
220. Tomatoes.
221. Fungous Diseases of the Cranberry.
224. Canadian Field Peas.
229. The Production of Good Seed Corn.
231. Spraying for Cucumber and Melon Diseases.
232. Okra: Its Culture and Uses.

<sup>1</sup> To residents of foreign countries a uniform charge of 5 cents each is made for Farmers' Bulletins, and except to Canada, Cuba, and Mexico 1 cent additional is required for postage. Orders should be forwarded to the Superintendent of Documents, Government Printing Office, Washington, D. C.

<sup>2</sup> For a subject index to Farmers' Bulletins, see Circular 4 of the Division of Publications, which will be sent free of charge to residents of the United States.

<sup>3</sup> Superseded by Farmers' Bulletin 282, entitled "Celery."

<sup>4</sup> Superseded by Farmers' Bulletin 240, entitled "Inoculation of Legumes," which in turn was superseded by Farmers' Bulletin 315, entitled "Progress in Legume Inoculation."

<sup>5</sup> Superseded by Farmers' Bulletin 339, entitled "Alfalfa."

<sup>6</sup> Contributed jointly by the bureaus of Entomology and Plant Industry.

- No. 238. Citrus Fruit Growing in the Gulf States.  
 240. Inoculation of Legumes.<sup>1</sup> [Distribution discontinued.]  
 242. An Example of Model Farming.  
 243. Fungicides and Their Use in Preventing Diseases of Fruits.  
 245. Renovation of Worn-Out Soils.  
 246. Saccharine Sorghums for Forage.  
 247. The Control of the Codling Moth and Apple Scab.<sup>2</sup> [Distribution discontinued.]  
 248. The Lawn.  
 250. The Prevention of Stinking Smut of Wheat and Loose Smut of Oats.  
 253. The Germination of Seed Corn.  
 254. Cucumbers.  
 255. The Home Vegetable Garden.  
 260. Seed of Red Clover and Its Impurities.  
 271. Forage-Crop Practices in Western Oregon and Western Washington.  
 272. A Successful Hog and Seed-Corn Farm.  
 274. Flax Culture.  
 278. Leguminous Crops for Green Manuring.  
 279. A Method of Eradicating Johnson Grass.  
 280. A Profitable Tenant Dairy Farm.  
 282. Celery.  
 283. Spraying for Apple Diseases and the Codling Moth in the Ozarks.<sup>2</sup>  
 284. Insect and Fungous Enemies of the Grape East of the Rocky Mountains.<sup>2</sup>  
 285. The Advantage of Planting Heavy Cotton Seed.  
 286. Comparative Value of Whole Cotton Seed and Cotton-Seed Meal in Fertilizing Cotton.  
 288. Nonsaccharine Sorghums.  
 289. Beans.  
 291. Evaporation of Apples.  
 292. Cost of Filling Silos.  
 294. Farm Practice in the Columbia Basin Uplands.  
 299. Diversified Farming under the Plantation System.  
 300. Some Important Grasses for the Gulf Coast Region.  
 301. Home-Grown Tea.  
 302. Sea Island Cotton.  
 304. Growing and Curing Hops.  
 306. Dodder in Relation to Farm Seeds.  
 307. Roselle: Its Culture and Uses.  
 310. A Successful Alabama Diversification Farm.  
 312. A Successful Southern Hay Farm.  
 313. Harvesting and Storing Corn.  
 314. A Method of Breeding Early Cotton to Escape Boll-Weevil Damage.  
 315. Progress in Legume Inoculation.  
 318. Cowpeas.  
 319. Demonstration Work in Cooperation with Southern Farmers.  
 322. Milo as a Dry-Land Grain Crop.  
 323. Clover Farming on the Sandy Jack-Pine Lands of the North.  
 324. Sweet Potatoes.  
 325. Small Farms in the Corn Belt.  
 326. Building up a Run-Down Cotton Plantation.  
 333. Cotton Wilt.  
 337. Cropping Systems for New England Dairy Farms.  
 339. Alfalfa.  
 343. The Cultivation of Tobacco in Kentucky and Tennessee.  
 347. The Repair of Farm Equipment.  
 354. Onion Culture.  
 355. A Successful Poultry and Dairy Farm.  
 356. Peanuts.  
 361. Meadow Fescue: Its Culture and Uses.  
 362. Conditions Affecting the Value of Market Hay.  
 364. A Profitable Cotton Farm.  
 365. Potato Growing in Northern Sections.  
 363. The Eradication of Bindweed, or Wild Morning-Glory.

<sup>1</sup> Superseded by Farmers' Bulletin 315, entitled "Progress in Legume Inoculation."

<sup>2</sup> Contributed jointly by the bureaus of Entomology and Plant Industry.

- No. 370. Replanning a Farm for Profit.  
 372. Soy Beans.  
 380. The Loco-Weed Disease.  
 382. The Adulteration of Forage-Plant Seeds.  
 386. Potato Growing on Irrigated Farms of the West.  
 —. Farm Practice in the Use of Commercial Fertilizers in the South Atlantic States. [In press.]

## YEARBOOK PAPERS.

Since its organization in 1901 the Bureau of Plant Industry has contributed seventy-three papers to the Yearbooks of the Department of Agriculture, all of which have been reprinted for distribution in separate form. A list of these papers follows. Copies of those in stock at the Department of Agriculture can be obtained without cost<sup>1</sup> by persons within the territory of the United States upon addressing a request therefor to the Secretary of Agriculture, Washington, D. C.

For a subject index to the papers contributed by the Bureau of Plant Industry to the Yearbooks of the Department of Agriculture, see Circular No. 17 of this Bureau.

- No. \*225. The Relation of Nutrition to the Health of Plants.  
 \*†229. Little-Known Fruit Varieties Considered Worthy of Wider Dissemination.  
 \*†230. Commercial Apple Orcharding.  
 \*†238. Agricultural Seeds—Where Grown and How Handled.  
 \*242. Agriculture in the Tropical Islands of the United States.  
 \*†246. The Home Fruit Garden.  
 \*254. The Hemp Industry in the United States.  
 \*262. The Contamination of Public Water Supplies by Algæ.  
 \*264. Industrial Progress in Plant Work.  
 266. Top-Working Orchard Trees.  
 \*†277. Bacteria and the Nitrogen Problem.  
 278. Systems of Farm Management in the United States.  
 \*279. Improvement of Cotton by Seed Selection.  
 281. Grape, Raisin, and Wine Production in the United States.  
 283. Promising New Fruits.  
 \*284. Plants as a Factor in Home Adornment.  
 287. Improvement of Corn by Seed Selection.  
 \*290. Fertilizers for Special Crops.  
 291. Crops Used in the Reclamation of Alkali Lands in Egypt.  
 293. Cultivation and Fertilization of Peach Orchards.  
 \*310. The Cultivation of Corn.  
 314. The Growing of Long-Staple Upland Cotton.  
 \*317. Relation of Cold Storage to Commercial Apple Culture.  
 320. Relation of Sugar Beets to General Farming.  
 \*321. Principal Commercial Plant Fibers.  
 \*†323. A Model Farm.  
 \*†325. Cultivation of Drug Plants in the United States.  
 326. Macaroni Wheat.  
 330. Promising New Fruits.  
 \*336. The Relation of Plant Physiology to the Development of Agriculture.  
 340. Opportunities in Agriculture: I. Growing Crops under Glass. II. Fruit Growing. III. General Farming.  
 \*343. New Citrus Creations of the Department of Agriculture.  
 \*†349. Potato Culture near Greeley, Colorado.

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- No. \*351. Sugar-Beet Seed Breeding.  
 354. Some Uses of the Grapevine and Its Fruit.  
 \*356. Promising New Fruits.  
 \*358. The Improvement of Tobacco by Breeding and Selection.  
 †361. Cotton Culture in Guatemala.  
 \*†363. Work of the Bureau of Plant Industry in Meeting the Ravages of the Boll Weevil and Some Diseases of Cotton.  
 \*†367. Plant Diseases in 1904.  
 \*377. Diversified Farming in the Cotton Belt: I. South Atlantic Coast. II. Alabama and Mississippi. III. Louisiana, Arkansas, and Northeastern Texas. IV. Texas.  
 \*383. New Fruit Productions of the Department of Agriculture.  
 \*384. The Business of Seed and Plant Introduction and Distribution.  
 387. The Handling of Fruit for Transportation.  
 \*389. The Effect of Inbreeding in Plants.  
 \*394. New Opportunities in Subtropical Fruit Growing.  
 399. Promising New Fruits.  
 401. Progress in Drug-Plant Cultivation.  
 \*†409. Plant Diseases in 1905.  
 †411. The Present Status of the Nitrogen Problem.  
 419. Range Management.  
 422. Methods of Reducing the Cost of Producing Beet Sugar.  
 \*427. New Citrus and Pineapple Productions of the Department of Agriculture.  
 \*429. Promising New Fruits.  
 \*431. New Tobacco Varieties.  
 \*†437. Plant Diseases in 1906.  
 441. Progress in Some of the New Work of the Bureau of Plant Industry.  
 \*446. The Art of Seed Selection and Breeding.  
 450. Promising New Fruits.  
 453. The Status of the American Lemon Industry.  
 †456. Cropping Systems for Stock Farms.  
 459. Truck Farming in the Atlantic Coast States.  
 461. Dry-Land Farming in the Great Plains Area.  
 463. Diseases of Ornamental Trees.  
 \*467. Plant Diseases in 1907.  
 475. The Wastes of the Farm.  
 478. The Search for New Leguminous Forage Crops.  
 483. The Causes of Southern Rural Conditions and the Small Farm as an Important Remedy.  
 487. Types of Farming in the United States.  
 490. Intensive Methods and Systematic Rotation of Crops in Tobacco Culture.  
 493. By-Products of the Sugar Beet and Their Uses.  
 494. The Development of Farm Crops Resistant to Disease.  
 496. Promising New Fruits.

OFFICE OF EDITOR OF BUREAU,

*Washington, D. C., February 15, 1910.*

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